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# **HISTORY OF TECHNOLOGY IN INDIA**

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## Medical Techniques and Practices in Mughal India

SYED ALI NADEEM REZAVI

Unani Medicine owes its origin to the works of Hippocrates (c. 460 BC - c. 370 BC) who established that the disease was a natural process, while its symptoms were the reactions of the body to the disease, which can be reversed by a person acquainted with them. With the rise of the Arabs, this system of medicine was further enriched. Scholars like Ibn Zuhr, al-Razi, Ibn Sina, Ibn Nafis, az-Zahrawi, Ibn al Baytar and many others contributed to its development.

With the Arab conquest of Sind, India came into contact with this Greco-Arab system of medicine, and by the time of the Khalji Sultans, it spread over a large territory.<sup>1</sup> In India this system gradually emerged as a hybrid Muslim-Hindu system known as the *tibb*. With the advent of the Mughals in India, this system came to flourish in its own right.<sup>2</sup> Our contemporary sources, both Persian and non-Persian, give us much information regarding its techniques and practices.

Like the western medical episteme, the European system of medicine, the *tibb* was also humoral though varied much as far as practice was concerned. It was probably due to this reason that the Europeans continued to look down upon it, commenting on the condition of physicians (*hakims* / *tabibs*) and medicine (*tibb*) in India, Fryer observes that the Indian Physicians neither understood the pulse nor did they treat other ailments.<sup>3</sup> Careri goes still further when he says, 'In Physick they (the Indians) have but small skill, and cure several Diseases by Fasting.'<sup>4</sup> Manucci sums up the issue by exclaiming 'From such doctors and such drugs *libera nos Domine!*'<sup>5</sup> This European perception of the Indian techniques and practice of the *tibb* appears to have extended into the eighteenth century. Thus a European traveller, Edward Ives, during the eighteenth century commenting on the 'Indian system' writes:

Man was divided into two or three thousand parts; ten thousand of which were made up of veins, ten thousand of nerves, seventeen thousand of blood, and a certain number of bones, choler, lymph, etc. And all this was laid down without form or order, either of history, disease or treatment.<sup>6</sup>

On the other hand, it is important to note that although both the European and the Indian systems failed to develop a comprehensive theory of disease causation, as pointed out by Deepak Kumar,<sup>7</sup> there developed a general agreement among the European physicians in India that Indian diseases were environmentally determined and should be treated by Indian methods. Careri, whose opinion about the *tibb* we have already noted, in a very perceptive passage articulates this and suggests that persons suffering from particular kind of diseases found in India respond more naturally only to the treatment given by the Indian physicians:

Experience [has] shown that *European Medicines* are of no use there. The *Physitions* that go out of *Portugal* into those parts, must at first keep company with the *Indian Surgeons* to be fit to Practice, otherwise if they go about to cure those *Distempers*, so far different from ours after the *European manner*, they may chance to Kill more than they Cure.<sup>8</sup>

A number of tropical diseases and their cures were also disseminated from the Indies to Europe. A Portuguese physician, Garcia da Orta came to India in 1534 and remained there a physician to the governors of Goa and subsequently served under Burhan Nizam Shah of Ahmadnagar till his death. In 1563 he wrote his important work *Colloquies on the Simples, Drugs and Materia Medica of India* which gives the first account of the treatment of cholera which he learnt from the practices of the Indian physicians.<sup>9</sup>

Commenting on the level of medical education in India, John Fryer, himself an English physician, and an M.D. from Cambridge, suggests that the field of medical science in India

...was open to all Pretenders, here being no Bars of Authority, or formal Graduation, Examination or Proof of their Proficiency; but everyone suffers; and those that are most skilled, have it by Tradition, or former Experience descending to their Families.<sup>10</sup>

A close reading of our sources however gives us contrary information. Although there were not many separate colleges exclusively dealing with the medical sciences, as in Aleppo, Egypt or Persia, their existence in India as well is testified. Monserrate pointedly mentions 'a very famous school of medicine' in Sirhind, 'from which doctors are sent all over the empire'.<sup>11</sup> Similarly Abdul Baqi Nahawandi mentions the *madrasa* of Hakim Shams and Hakim Mu'in at Thatta, where these two well known physicians would give lectures on medicine.<sup>12</sup> We hear of several other *madrasas*, spread from Punjab to Gujarat, opened and run by the physicians, where presumably the curriculum also included a study of

texts on *tibb*. . This impression is strengthened by Abū-l Fazl's statement in *Ā'in-i Akbarī*, that Akbar had directed the inclusion of *tibb* with the other sciences in the school curriculum.<sup>13</sup> The well-known *Nizami* course included, besides other texts, the following renowned texts on *tibb*: *Sharh-i Asbab*, *Mu'jaz al-Qanun*, *Qanun* of Abu 'Ali Sina, *al-Nafisi* and *Hidayah-i Sa'ida*.<sup>14</sup>

In fact, a perusal of the Persian sources shows that medical education of the *tabībs* and *hakīms* was tutor-oriented.

'Abdul Qadir Badauni, the famous historian and critic of Akbar's reign, in his book of ethics, *Nījāt ur-Rashīd*, which he composed in 1590-91, while providing an insight into the code of ethics to be followed by the physicians (see Appendix) asserts:

Just as legal opinion given without knowledge can ruin spiritual life, so medical treatment given without wisdom can destroy physical life. Any one who has not read the books of medicine with reputed physicians for a number of years, not put them to use for long years of life, nor obtained knowledge of the properties of drugs, nor received authorization for medical practice from masters [in the profession], but simply wishes that by force of some intuition, he may treat people without having any experience and consider it the means of gaining proximity to rulers and kings, is not a physician, no expert master, but a blood-shedder like a crude executioner. It is incumbent on the rulers of Islam to suppress such repute-less set [of persons].[Emphasis added]

Thus those desirous of learning medicine, would go, apart from *madrasas*, to some reputed physician and get the required education from him.<sup>15</sup> Badauni explicitly informs that Hakim 'Ali Gilani had acquired his knowledge in the company of Hakim ul-Mulk Shamsuddin Gilani and Shah Fathullah Shirazi.<sup>16</sup>

In fact we have the evidence that a sizeable number of physicians of the Mughal period went to reputed centres of medical education located in Lahijan (Gilan), Mashhad, Isfahan and Shiraz.<sup>17</sup> An example can be given of Hakim Hashim, tutor of Aurangzeb, who stayed in the Iranian centres of medical education in Mashhad and Shiraz for twelve years before opening his own *madrasa* at Ahmadabad.<sup>18</sup>

Practical training to the budding *tabībs*, as recommended by Badauni in *Nījāt ur Rashīd*, was given in *madrasās* attached to *shifākhānas* (hospitals), which thus would act as modern 'medical colleges'.<sup>19</sup> During the reign of Shahjahan, a government hospital was constructed at Delhi near Chowri Bazar, 'for the treatment of travellers and students (*tālib-i 'ilman*) who cured the sick'.<sup>20</sup> A reference to a 'school of medicine' at Sirhind has already been given, from where, according to Fr Monserrate, 'doctors are sent out all over the empire'.<sup>21</sup> Monserrate was probably referring to a medical college. Another government hospital that flourished was the *dār ush shifā* of Ahmadabad, where Shahjahan appointed Hakim Mir

Muhammad Hashim as the head.<sup>22</sup> This hospital was meant for treating the poor<sup>23</sup> and Unani as well as Āyurvedic (*tibb-i hindi*) physicians and surgeons were appointed here. We hear of two more government hospitals, the *dār ush shifā* at Aurangabad and the *dār ush shifa* at Surat.<sup>24</sup>

Apart from government 'medical colleges', hospitals with training facilities could also be established by nobles. During Jahangir's reign, Saif Khan built a hospital complex at Jeetalpur comprising a mosque, a *madrasa* and a *shifā khāna* which treated the poor.<sup>25</sup> During the same reign, Hakim Alimuddin Wazir Khan constructed a *madrasa* and a *dār ush shifā* along with other buildings at his native town of Chiniot in the Punjab, and dedicated those to the residents of that town.<sup>26</sup>

Another form in which sometimes the education in *tibb* may have been imparted was through training in the *dawakhānas* (dispensaries) and *sharbatkhānas* (Syrup Houses) run through state munificence.<sup>27</sup> If a person was not able to procure a *sanad* (certificate) from a recognized *tabīb*, he was not considered up to the mark to be appointed or consulted.<sup>28</sup>

Before a physician or a surgeon could join a service he had to pass certain tests. Extreme care was taken to select or appoint only the most accomplished and experienced physician.<sup>29</sup> We know that in the Indian system of medicine there was much emphasis on urine analysis and urine therapy. Thus when Hakim Ali Gilani was being considered for appointment, he had to pass through a test set for him by Akbar. The emperor ordered several bottles containing the urine of sick and healthy persons, as also that of cattle and asses, to be brought before the *hakīm* for detection. Only after the *hakīm* diagnosed each one of them was he taken into imperial service.<sup>30</sup>

However, to be appointed as a physician in a government hospital, recommendations had to be made by the *bakhshi* or some other responsible person.<sup>31</sup>

Similar tests to check the ability of the physician were taken before he was actually allowed to treat his patients. Manucci recounts how he was tested before being allowed to treat a princess while in the retinue of Prince Shah Alam:

It is also the custom to probe the Physicians by such trickeries in order to be assured of their ability and of their recognition of diseases. She (the princess) made out she was ill, and caused to be sent to me a vessel full of urine with an enquiry whether I could recognise from it the disease she was suffering from. Seeing that the liquid was green, and seemed to have some drug mixed with it, I set my imagination to work, and answered with a smile that the urine came from a person who had eaten largely of green stuff the preceding night. As soon as I pronounced these words there was a great burst of laughter behind the curtains of the bed, and they said I was a great doctor. In the end they informed me it was the urine of a cow.<sup>32</sup>

Similarly Fryer was asked to feel and recognize a healthy person's pulse before being let to examine that of the ailing daughter of a local chieftain.<sup>33</sup>

Manucci also makes it clear that *purdah* was strictly observed while a physician would consult his female patient. Curtains would be placed to screen the patient to shield her from the gaze of the doctor. At another place Manucci also observes that before being conducted into the royal harem or that of a noble, the physician was covered from head to waist with a cloth and accompanied by eunuchs.<sup>34</sup> Generally a set of rooms, styled as *bīmārkhāna* was assigned for the ailing lady in the *haram*.<sup>35</sup> While visiting a patient, the physician would generally wear white attire and would carry no weapons upon his person. Manucci further informs us that in the case of a patient being of royal blood, prior permission had to be taken from the emperor in order to start the treatment.<sup>36</sup> He further says that it was not the practice among princes and nobles to talk or have any sort of relations with the servants of other nobles or princes for fear of treason. This applied to Physicians particularly. When in 1683 Diler Khan, enemy of Prince Shah Alam fell ill and with fair promises summoned Manucci to treat him, the prince strictly refused permission.<sup>37</sup>

It also appears that there was a hierarchical division among the physicians who were in Imperial service, under the nobles, or serving in a hospital. There used to be a chief physician under whose charge a number of subordinate physicians and surgeons were placed and they were bound to obey his orders.<sup>38</sup> This chief physician, in Mughal terminology, was known as *sarāmad-i atibbā* or *sarāmad-i hukamā*.<sup>39</sup> The chief physician of the hospital on the other hand was known as '*hakīm-i dār al-shifā*'. There could also be a superintendent of hospital, the '*daroghā-i dar ush shifā*'.<sup>40</sup>

Mughal miniatures also confirm the hierarchical division of the physicians. In three or four miniatures, a chief physician (*sarāmad-i atibbā*) is depicted tending the patients along with his subordinate colleagues.<sup>41</sup>

As far as the druggists and apothecaries are concerned, one may note that this particular sector of the medical service was very under-developed in Mughal India. The antidotes and potions prescribed by the physicians would rarely be available in the market. Perhaps pharmacies selling readymade medicines which existed were confined to important towns. In 1581 one finds Hakim Abul Fath Gilani, then at Lahore, procuring his antidotes and medicines through his brother Hakim Humam, who was at Fathpur Sikri.<sup>42</sup>

During the period under discussion, nurses and midwives were not actually missing. Muhammad Salih mentions a certain Satiunnisa

Khanam who performed the duties of a nurse in the royal harem.<sup>43</sup> If Fryer is to be believed, the services of mid-wives were needed only by the rich.<sup>44</sup> Due to this reason it was thus not an economically viable profession.<sup>45</sup>

Medical certificates were also in vogue during the Mughal period. Badauni informs us that when he presented himself before the emperor after an absence of five months, he had to produce medical certificates to substantiate his claim of being ill:

The Emperor asked how long I had been absent from my post? He (Hakim Humam) replied, Five months. The Emperor asked, On what pretext? He replied on the score of sickness. And he brought a petition from the grandees of Badaun and a report from Hakim Ainul Mulk to the same effect from Delhi.<sup>46</sup>

A general view which has found currency is that the physicians were completely dependent on royal patronage, or on the service of and endowments from the aristocracy. It is also sometimes held that the demand for the service was very limited.<sup>47</sup> This erroneous view seems to be based mainly on Tavernier's observation to the effect that:

....in all the countries we have just passed through, both in the Kingdom of Carnatic and the Kingdoms of Golkonda and Bijapur, there are hardly any physicians except those in the service of the Kings and Princes.<sup>48</sup>

But what the statement reveals is that Golconda and Bijapur were different in this respect from other areas. We have already noted that there were numerous physicians in Mughal India who ran their own clinics, imparted education and treated the poor. Apart from the evidence already cited, there are many more references to private practitioners. Some of them however, were no more than quacks (*nā-tabīb*), a fact borne out by Badauni.<sup>49</sup> Manucci too, in one of his passages, refers to these unqualified *bazaar* physicians. While giving an account of the *caravan sarais*, he mentions the 'endless cheating physicians' who pestered the travellers.<sup>50</sup>

These *bazaar* physicians appear to have lived mainly on private practice. For instance, Badauni uses the term *mutabib-Sirhindī*, that is, a private practitioner of Sirhind, when he mentions Shaikh Hasan, father of Shaikh Bhina, the surgeon.<sup>51</sup> Banarsi Das, in his *Ardha Kathanak*, mentions a physician (*baid*) of Jaunpur who treated him when he was young. He also mentions a *nai* (literally, barber), a term applied to local surgeons, who treated him for syphilis at Khairabad in 1602.<sup>52</sup> When his father fell ill in 1616, he was treated by yet another private practitioner at Banaras.<sup>53</sup> During Shahjahan's reign a physician called Hakim Basant had a flourishing practice at Lahore. Surat Singh mentions a 'specialist' of dog-bite at Kalanaur, to whom hapless patients would be carried.<sup>54</sup> During the reign of Aurangzeb, Hakim Muhammad Abdullah practiced

and taught at Agra.<sup>55</sup> Balkrishan Brahman, a petty official, in his letters written during the reign of Aurangzeb, mentions local medical practitioners like Balram Misr and Manka Tabib at Hissar Firoza. In one of his letters recommending Manka Tabib to a *mansabdar* for employment, he certified that 'a large number of people have benefited by associating with him'.<sup>56</sup> The presence of Hindu *bazaar* physicians in the south is attested to by a number of European travellers.<sup>57</sup>

The practice of setting up private clinics in the *bazaars* by physicians also finds place in the Mughal miniatures. A miniature attributed randomly to Abul Hasan and pertaining to the reign of Jahangir reminds us of Tavernier's descriptions. It depicts a physician sitting under a canopy (*shamiana*) on a platform and advising an old patient.<sup>58</sup> On the platform on which he sits are displayed vials, bottles, jars, cups and bags containing a number of drugs, viz. *sufuf* (powder), *sharbats* (syrups) and 'arq (medicinal liquid extracts). A number of books and a small mortar and pestle to mix the medicines are also seen. On one of the bottles is inscribed '*sharbat-i diq*' (syrup for the treatment of consumption). Every bottle and bag is labelled. Behind the physician stands a boy, who probably acted as his assistant.

Thus we see that not only was there considerable scope for private practice, in many cases physicians preferred establishing private clinics to government posts or accepting patronage from a noble. Yet, interestingly enough, we know on the testimony of Fryer that there was no dearth of physicians who coveted employment under a noble.<sup>59</sup> Presumably this was so because employment under a noble gave them a feeling of security and ensured a comparatively small but steady income.<sup>60</sup>

These medical practitioners tended to be very hostile to their European counterparts. Partly this might have been an outcome of the European physicians assuming superior airs vis-a-vis the Indian physicians. As Manucci tells us, the Europeans were often not agreeable to accepting salaries on a par with those of Indian physicians.<sup>61</sup> However, Linschoten speaks very reverentially of the Indian physicians who, he says, had no scruples in treating the natives and Europeans alike.<sup>62</sup>

As far as the state of knowledge in the field of medicine during the Mughal period is concerned, many modern scholars, following the testimony of the European travellers of the seventeenth century, have expressed serious reservations. As a matter of fact, Manucci held a firm belief that these *tabibs* had no knowledge of medicine and were certainly not in a position to cure the stone, paralysis, epilepsy, dropsy, anaemia, malignant fevers or other difficult complaints.<sup>63</sup>

The available evidence, however, suggests that the medical profession in Mughal India had achieved a considerable degree of specialization

within the framework of Graeco-Arab medical science. The *hakīms*, *tabībs* and *jarrāhs* (surgeons) appear to have had amongst them ophthalmologists, specialized surgeons, pharmacologists, veterinarians, sexologists and anatomists. Manucci admits that the *tabībs* of the period were well-versed in the science of pharmacy. He says:

in this country it is incumbent on a doctor to prepare medicines, ointments and distillation — in fact all things that appertain to the apothecary's office. Many a time it is also necessary to instruct as to the fashion of preparing the patient's food.<sup>64</sup>

The preparation of medicines was considered the responsibility of the physicians who prescribed them. The prescriptions, however, were generally kept a secret by physicians from one another due to rivalry among them.<sup>65</sup> This was, perhaps, an important factor inhibiting the growth of pharmaceutical establishments. Generally, pharmaceutical preparations consisting of *sufūf*(powder), *mahlūl*(suspension), *mājūn* and *jawārīsh* (electuaries), *sharbat* (syrups), 'arq (distilled medicinal water) and mixtures were prepared by the physicians themselves. Sometimes the physician possessed expertise in more than one field. For instance, during the reigns of Babur and Humayun, Hakim Yusum bin Muhammad Yusufi, who migrated to India along with Babur, was an expert in symptomatology, therapeutics, ophthalmology and general medicine. He was the author of at least twelve books. Two of his treatises dealing with symptomatology are preserved in the Maulana Azad Library, Aligarh.<sup>66</sup> His *Fawa'id-ul Akhyār* and *Ilājul Amrāz* deal with hygiene and therapeutics.<sup>67</sup> He also compiled a short discourse on eye diseases and their cures.<sup>68</sup> Similary, Hakim Muhammad bin Yusuf ut Tabib al-Harawi, personal physician of Babur, was, in addition to his other accomplishment as *tabīb*, one of the most widely-read pathologists of his time.<sup>69</sup> Hakim Abdur Razzaq, who was a contemporary of Humayun, wrote *Khulāsat-ut Tashrīh*, which deals with human anatomy.<sup>70</sup>

During Akbar's reign, much stress seems to have been laid on surgery. Wounds were treated and blood-letting performed by persons known as *jarrāh*(surgeons). Shaikh Bhina, Mulla Qutbuddin Kuhhal (eye surgeon?), Hakim Biarjiu, Hakim Bhairon and Chandrasen were all reputed to be accomplished surgeons.<sup>71</sup> Hakim Shaikh Bhina wrote a book on medical prescriptions which is popularly known as *Mujarrabāt-i Shaikh Bhīna*.<sup>72</sup> Hakim 'Ainul Mulk 'Dawwani' Shirazi excelled himself in the field of ophthalmology.<sup>73</sup> He was also an expert in the use of collyrium and pharmacology.<sup>74</sup> His treatise, *Fawūid ul-Insūn*, is a work on pharmacology in versified form.<sup>75</sup> Muhammad Hakim Gilani had expertise in sexology.<sup>76</sup> Hakim Ali Gilani, one of the most accomplished physicians of Akbar's reign, apart from his formula of *roghan-i deodār*, had also prepared *sharbat-i kaifnāk*, which helped in alleviating exhaustion.<sup>77</sup> He also had

considerable knowledge in fields like osteology (study of bone structures), myology (study of muscles), angiology, neurology and the digestive system.<sup>78</sup> Hakim Fathullah Shirazi translated the famous *Qanun* of Abu Ali Sina (Avicenna) into Persian for the benefit of the people.<sup>79</sup> Muhammad Qasim Ferishta, the famous author of *Tarikh-i Ferishta*, wrote *Dastur-i Atibba*, now popularly known as *Tibb-i Ferishta*, in order to create among the Muslims an interest in the Indian system of medicine.<sup>80</sup> During the same reign, Ma'sum Bhakhari, author of *Tarikh-i Sindh*, compiled a treatise on the treatment of diseases and drugs.<sup>81</sup> Similarly, in 1556 Shaikh Tahir authored *Fawāid-ul Fuād*, dealing with general medicine.<sup>82</sup>

During the reign of Jahangir, Muqarrab Khan and Hakim Ali Akbar were renowned surgeons.<sup>83</sup> Muqarrab Khan was also an expert bleeder and veterinarian.<sup>84</sup> Later his nephew Hakim Qasim also grew to become an expert bleeder.<sup>85</sup> Amanullah Firoz Jang Khanazad Khan, son of Mahabat Khan, famous noble under Jahangir and Shahjahan, had a sound understanding of medicine. His *Ganj-i Bād Āwurd* is a good work on pharmacology. His second work, *Ummul Ilāj*, is a treatise on purgatives.<sup>86</sup>

Under Shahjahan as well, much work was done on pharmacology. Sheikh Muhammad Tahir, Hakim Ma'sum Shustari and Hakim Nuruddin Muhammad 'Ainul Mulk, grandson of Hakim Shamsuddin Ali Dawani 'Ainul Mulk (of Akbar's reign), have left behind books on pharmacology.<sup>87</sup> Hakim Ma'sum's *Qarābadīn-i Ma'sūm* deals with the preparation of drugs, electuaries, pulps, pastes, syrups, tablets, collyriums, enemas, gargles and ointments, as well as the effects of tea and coffee.<sup>88</sup> Hakim Nuruddin 'Ainul Mulk's *Alfāz-i Adwiyya* is an encyclopaedia of pharmacology,<sup>89</sup> while his *Ilājāt-i Dara Shukohi* is a compendium of medical science basically instructing travellers on dietary precautions, anatomy, medicines etc.<sup>90</sup>

During the reign of Aurangzeb, Hakim Sanjak achieved much in the field of ophthalmia.<sup>91</sup> Bernier says that his patron Danishmand Khan was well-versed in anatomy.<sup>92</sup> He even had works of William Harvey on the circulation of blood, and Pecquet translated these into Persian for him.<sup>93</sup> Nurul Haq Sirhindi wrote *Ainul Hayāt*, a rare work on plague.<sup>94</sup> Hakim Muhammad Akbar Arzani, a renowned physician of this reign, apart from translating a well-known commentary on the popular thirteenth-century pathological treatise by Najibuddin Samarqandi,<sup>95</sup> wrote a commentary on Chaghmini's *Qānūncha*.<sup>96</sup> Qazi Muhammad Arif wrote *Tibb-i Qāzi 'Arif*, a general work on medicine containing prescriptions for diseases that are especially indigenous to India.<sup>97</sup>

It appears from the surviving manuscripts of works written on medicine and other sciences, now preserved in various repositories<sup>98</sup> that in Mughal India a large number of books on medicine were either written or compiled, translated or commented upon (see Tables I and II). Under

Table I

Century	Medicine			Astronomy			Mathematics					
	Pers-	Arab	Sansk-	Total	Pers-	Arab-	Sansk-	Total	Pers-	Arab-	Sansk-	Total
13th	4	33	31	68	11	21	8	40	5	30	2	37
14th	21	5	50	76	7	6	15	28	8	29	3	40
15th	18	1	36	55	25	32	47	104	8	22	4	34
16th	120	10	61	191	34	36	93	163	6	11	18	35
17th	102	12	122	126	39	30	190	259	23	25	14	62
18th	133	6	80	219	32	22	37	91	34	12	10	56

\*Source: A. Rahman et. al., *Science and Technology in Medieval India: A Bibliography of Source Materials in Sanskrit, Arabic and Persian*, New Delhi, 1982.

Table II. Categories of Books on Medicine (Persian)

Century	Total	General	Specialized	Anthologies/ Compendiums	Dictionaries	Encyclopaedias	Commentaries	Translations
13th	4	1	2	-	-	-	-	1
14th	21	5	11	1	1	-	1	3
15th	18	4	10	-	3	-	-	-
16th	120	15	93	5	1	-	-	6
17th	102	10	68	5	4	3	2	10
18th	133	10	98	8	1	3	3	10

\*Source: A. Rahman et. al., *Science and Technology in Medieval India: A Bibliography of Source Materials in Sanskrit, Arabic and Persian*, New Delhi, 1982.

the early Mughals (sixteenth to seventeenth centuries) and later Mughals (eighteenth century) the largest number of books written belonged to the field of medicine, as compared to astronomy and mathematics, the other two popular fields of study. A sudden impetus to the collection and writing of books on medicine started in the sixteenth century, which continued down to the eighteenth century. This trend was confined generally to works in Persian and Sanskrit; the number of books in Arabic, on the other hand, either declined or remained stable.

Table II shows the trend of specialized books on medicine developing during the sixteenth century. The seventeenth century saw some decline followed by a steep rise under the later Mughals. The trend of anthologies and compendia, as well as translations of previous works also developed from the sixteenth century onwards.

An interesting question can be asked about the physicians of medieval India: were these *tabib*s dogmatic in their approach or were they open to change? Some idea in this respect can be had from the discussion that is reported to have taken place at Akbar's court in 1603, on the use of tobacco. In this year Asad Beg Qazwini brought to the court from Bijapur a small sample of tobacco and a smoking pipe for the emperor. When Akbar showed an inclination to smoke, Hakim Ali Gilani sought to dissuade him arguing that as nothing was mentioned regarding tobacco in 'our medical books', it would be risky to use it without making further investigations:

Infact, this [tobacco] is an untried drug. None of the old medical authorities (*hukama*) have written about it. How can we suggest that His Majesty take such a thing whose real essence is unknown? It is not proper for His Majesty to take it. It is not necessary for us to follow the Europeans and to adopt a thing not known to our sages, and without experiment.<sup>99</sup>

While one may not disapprove in principle of the advice that Hakim Ali Gilani gave on that occasion, one cannot help noting the intrinsic cause of the *hakim*'s line of argument. For him nothing was permissible that was not sanctioned by the texts of *unāni tibb* handed down by the great masters of earlier times. This obviously applied to the new ideas regarding medicine that were coming at this time from the west. However we find him advocating 'experiment' before accepting a new thing, although he was at the same time dissuading the emperor from making the experiment with smoking tobacco!

But then, did this mean that the urge to improvise was absent among the Indian physicians? An answer to this question may be found in the response of Asad Beg Qazwini to the objection of Hakim Ali:

It is a wonderful thing that all customs of the world have come about (at one time or the other), and from the time of Adam to this day everything has come by and by. Whenever anything new appears among one people, it gets to be known all over the world, and all people adopt it. Scholars and physicians need

to apply themselves to learn of its usefulness or ill-effect and to experiment (with it). May be, [as of now] they just do not know its [tobacco's] benefits. Thus China-root (*chob-i chīnī*) was not present in old times, and has appeared recently and is yet found beneficial in so many diseases.<sup>100</sup>

The China-root was a Chinese discovery<sup>101</sup> which was easily accepted by the practitioners of the *hikmat* in India. According to Linschoten this Chinese remedy 'since it became known in India, they (the Indian physicians) would never use any other remedy.'<sup>102</sup> Garcia da Orta also alludes to the use of China-root by the Indian physicians as a cure for syphilis.<sup>103</sup>

A stray reference by Manucci suggests that the surgeons, at least of the Deccan, improvised techniques that were a step forward towards the as yet unknown field of rhinoplasty, on which the modern plastic surgery is founded. He says that the native surgeons of Bijapur could fashion a crude nose for those who had this organ severed:

They would cut the skin of the forehead above the eyebrows and make it fall down over the wounds on the nose. Then, giving it a twist, so that the live flesh might meet the other surface, and by healing applications, they fashioned for them a nose, though imperfect.<sup>104</sup>

Manucci says he saw many persons with such noses.<sup>105</sup> He does not mention if the patients were operated upon under sedatives or not. However, G.T. Vigne, a 19<sup>th</sup> century traveller who visited Kangra in 1839 fills the gaps left by Manucci. He informs us that during the operation to model the nose, 'opium, bang or wine' was given to the patients to make them senseless. He further informs us that the skin cut from the forehead was sewn on the skin below and supported by a piece of cotton. An ointment containing blue vitriol was thereafter applied to the wounds. Vigne traced back the practice to the reign of Akbar.<sup>106</sup>

Variolation (*tīkā*), which was an inoculation of a healthy individual with true smallpox, which produces a milder attack than spontaneous infection does and confers immunity on the individual against future attacks was also used by the Indian physicians. Describing the technique as practiced in Bengal by the *vaidyas*, Holwell writes:

The inhabitants of Bengal, knowing the usual time when the inoculating Brahmins annually return, observe strictly the regimen enjoined . . . ; this preparation consists only in abstaining for a month from fish, milk, and ghee; the prohibition of fish respects only the native Portuguese and Mahomedans, who abound in every province of the empire. When the Brahmins begin to inoculate, they pass from house to house and operate at the door . . . . The instrument they make use of is of iron, about four inches and a half long, and of the size of a large crow quill, the middle is twisted, and the one end is steeled and flattened about an inch from the extremity, and the eighth of an inch broad; this extremity is brought to a very keen edge, and two sharp corners; the other end of the instrument is an earpicker, and the instrument is precisely the same as the Barbers of Indostan use to cut the nails, and depurate the ears of their customers.<sup>107</sup>

Whether the *Unāni* physician adopted this technique of variolation to treat the small pox, we do not know. However we hear of late 17<sup>th</sup> – early 18<sup>th</sup> century *hakim*, Hakim Muhammad Arzani attempting to cure his son suffering from small pox by pricking and draining out the vesicles with the aid of gold needles.<sup>108</sup>

In Mughal India, like the other professions, we find the physician's profession also tended to become hereditary in character.<sup>109</sup> There are innumerable cases of physician's profession running in the same family. One might give the example of Hakim Ali Gilani and his brothers of Akbar's time who were all famous *tabibs*. Their father was also a physician. Muqarrab Khan, the surgeon and veterinary of Jahangir's reign, was the son of a physician and a surgeon. His grandfather too had been a practicing physician at Sirhind. His nephew had also imbibed the art of healing and surgery. The list of physicians provided in *Ā'in-i Akbarī*, *Muntakhabu-t Tawārikh*, *Ma'āsir-i Rahimi*, and *Tabaqāt-i Akbarī*, as well as references in Lahori's *Pādshāhnāma*, *Ma'āsir-i 'Ālamgīrī*, and the European travellers' accounts, all point towards the hereditary nature of this profession. As had been pointed out at the outset, the practice of imparting education in *tibb* by a father to his son was common in Mughal India and one might suggest that it was an effective method of perpetuating the profession in the same families.

#### APPENDIX

##### BADAUNI'S CODE FOR PHYSICIANS<sup>110</sup>

And of this genre [of improper conduct] is the pursuit of medical practice without past experience. Just as legal opinion given without knowledge can ruin spiritual life, so medical treatment given without wisdom can destroy physical life. Any one who has not read the books of medicine with reputed physicians for a number of years, not put them to use for long years of life, nor obtained knowledge of the properties of drugs, nor received authorization for medical practice from masters [in the profession], but simply wishes that by force of some intuition, he may treat people without having any experience and consider it the means of gaining proximity to rulers and kings, is not a physician, no expert master, but a blood-shedder like a crude executioner. It is incumbent on the rulers of Islam to suppress such reputeless set [of persons].

One of the conditions for the physician is this that he should be a proficient physician by knowledge, and in word and deed truthful, and compassionate towards all creatures. For him there should be no difference between friend and foe, acquaintance and stranger. Nor should he be an idle-talker, favour-seeker, self-praiser, unjust, and indifferent. When he

engages in treating a patient he should solicit success from the Almighty. He should not impose an insupportable burden on a patient who is destitute and needy and should not let his self-interest intrude. He should attend to the needy more than to the well-provided. So far as he can, he should himself provide medicine and diet to the destitute patients out of his own resources, obtaining [spiritual] recompense and gratitude in return. He should not abstain from instructing other people and should not fully rely on compounded drugs as such are all suspect.

He should not place entire confidence in his own opinion alone, and if he finds himself unable to treat an ailment, he should on his own consult a more knowledgeable physician, and should not at all consider it disgraceful to appear as a beginner, but rather make him [the senior physician] a collaborator with himself and not strive after contention. After exchanging opinions, whatever is found correct should be followed whether it means following someone else's opinion or his own.

If the disease happens to be incurable he should not terrify the patient and should not make him despair of life. Although [ultimately] no one can prevent death, the duty of the physician is that he should by artful devices lead the patient in this physical world of four elements from one year further to another. He should not be too much solicitous of praise by people, and of the wherewithal of splendour.

In seeking glory, there is no better deed than securing cures.

As far as possible he should personally attend upon the patient, and if he does not have the time he should depute his students and assistants, with full effort and effectual arrangement, to wait upon the sick.

These counsels are furnished out of sincerity. It is incumbent upon him [the physician] to investigate the human body (*tan-i ausāf*). But in regard to counsels on matters that appertain to the practice of medicine, these are described in the books of godly physicians (*hukama-i ilāhi*). A recital of these does not fall within the province of the expounders of ethics. 'And He is the curer of Disease, and is Himself free of Disease' (Quran).

#### NOTES AND REFERENCES

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58. 'An old man consults a doctor', *Bustan-i Sa'adi*, Aboulala Soudavar Collection, f. 176r, cf. S.C. Welch, Annemarie Schimmel et al., *The Emperor's Album: Images of Mughal India*, New York, 1987, fig. 25.
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60. As a private practitioner, Manucci was offered Rs 4,000 by a patient (Manucci, *Storia*, III, p. 132); in the service of Shah Alam he received Rs 300 p.m. (ibid., II, p. 215) apart from occasional gifts ranging from Rs 400 to Rs 200 for individual treatment of the members of the princes' *haram* (ibid., II, p. 331). The government physicians on the other hand had a salary of Rs. 2 per day (i.e.

Rs. 60 p.m.). See Nadeem Rezavi, 'Physicians as Professionals in Medieval India'.

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